

PATENT COOPERATION TREATY

PCT

REC'D 10 SEP 2004

WIPO

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference FRAUNHO1.039	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US03/27693	International filing date (day/month/year) 04 September 2003 (04.09.2003)	Priority date (day/month/year) 04 September 2002 (04.09.2002)
International Patent Classification (IPC) or national classification and IPC IPC(7): G06F 12/14 and US Cl.: 713/187		
Applicant FRAUNHOFER CRCG, INC.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 3 sheets, including this cover sheet.
- ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of ___ sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of report with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 01 April 2004 (01.04.2004)	Date of completion of this report 23 August 2004 (23.08.2004)
Name and mailing address of the IPEA/US Mail Stop PCT, Attn: IPEA/US Commissioner for Patents P.O. Box 1450 Alexandria, Virginia 22313-1450 Facsimile No. (703) 305-3230	Authorized officer Ayaz Sheikh Telephone No. 703-305-3900

Form PCT/IPEA/409 (cover sheet)(July 1998)

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/US03/27693

I. Basis of the report

1. With regard to the elements of the international application:*

- ☒ the international application as originally filed.
- ☒ the description:
 pages 1-30 _____ as originally filed
 pages NONE _____, filed with the demand
 pages NONE _____, filed with the letter of _____.
- ☒ the claims:
 pages 31-36 _____, as originally filed
 pages NONE _____, as amended (together with any statement) under Article 19
 pages NONE _____, filed with the demand
 pages NONE _____, filed with the letter of _____.
- ☒ the drawings:
 pages 1-16 _____, as originally filed
 pages NONE _____, filed with the demand
 pages NONE _____, filed with the letter of _____.
- ☐ the sequence listing part of the description:
 pages NONE _____, as originally filed
 pages NONE _____, filed with the demand
 pages NONE _____, filed with the letter of _____.

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages NONE
- ☐ the claims, Nos. NONE
- ☐ the drawings, sheets/fig NONE

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/US03/27693

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. STATEMENT

Novelty (N)	Claims <u>5, 8, 11-13, 19-21, 27-29</u>	YES
	Claims <u>1-4, 6, 7, 9, 10, 14-18, 22-26</u>	NO
Inventive Step (IS)	Claims <u>5, 8, 11-13, 19-21, 27-29</u>	YES
	Claims <u>1-4, 6, 7, 9-10, 14-18, 22-26</u>	NO
Industrial Applicability (IA)	Claims <u>1-29</u>	YES
	Claims <u>NONE</u>	NO

2. CITATIONS AND EXPLANATIONS

Claims 1-4, 6, 7, 9-10, 14-18, 22, 23, 24, 25, and 26 lack novelty under PCT Article 33(2) as being anticipated by Monden et al. Monden et al's paper relates to a way of encoding a static watermark in to the JAVA class files as a way to detect if someone has copied the files. Monden et al also teach obfuscating to scramble variables and method names before compilation. Monden et al teach a method to retrieve watermarks from compiled source code.

Claims 5, 8, 11-13, 27-29 meet the criteria set out in PCT Article 33(2)-(3), because the prior art does not teach or fairly suggest Monden is silent in disclosing using multiple keys to create associations in the method of inserting a watermark into JAVA source code. A thorough search of the prior art failed to find any teaching of this limitation.

----- NEW CITATIONS -----

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau(43) International Publication Date
18 March 2004 (18.03.2004)

PCT

(10) International Publication Number
WO 2004/023313 A1(51) International Patent Classification⁷: **G06F 12/14**

(US). ZHAO, Jian [CN/US]; 130 New Road, Rumford, RI 02916 (US).

(21) International Application Number:
PCT/US2003/027693

(74) Agent: NELSON, Gordon, E; 57 Central St., P.O. Box 782, Rowley, MA 01969 (US).

(22) International Filing Date:
4 September 2003 (04.09.2003)(81) Designated State (*national*): US.

(25) Filing Language: English

(84) Designated States (*regional*): European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR).

(26) Publication Language: English

Declaration under Rule 4.17:(30) Priority Data:
60/407,929 4 September 2002 (04.09.2002) US

— of inventorship (Rule 4.17(iv)) for US only

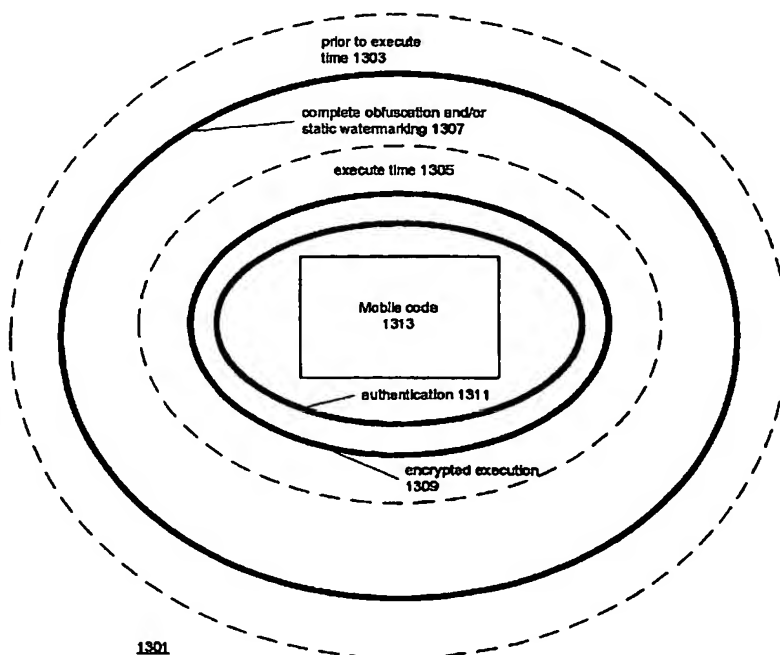
Published:(71) Applicant (*for all designated States except US*): FRAUNHOFER CRCG, INC. [US/US]; 321 S. Main St., Suite 2, Providence, RI 02093 (US).— with international search report
— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): LUO, Chenghui [CN/US]; 32 Cedar Pont Drive, Apt. 7, Warwick, RI 02886

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: PROTECTING MOBILE CODE AGAINST MALICIOUS HOSTS CROSS REFERENCES TO RELATED APPLICATIONS



(57) Abstract: Techniques for using a class loader to protect mobile code against a malicious host. The techniques include using the class loader to extend a class used by the mobile code such that a method is added to the code which authenticates the mobile code. When executed, the method provides a dynamic watermark that authenticates the code. The method may be encrypted until it is added to the code. One such method uses a static watermark in the code to determine whether the code has been modified. The techniques also include using a class loader to extend the class such that obfuscated symbolic names in the program that correspond to symbolic names defined by the class can be resolved. A way of doing this is to include a first association between the obfuscated symbolic names and encrypted forms of the corresponding symbolic names in the program and to make a second association between the encrypted forms of the corresponding symbolic names and information used to resolve the symbolic names defined in the class. The loader then uses the first and second associations to

resolve the obfuscated names.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/27693

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : G06F 12/14

US CL : 713/187

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 713/187, 167, 176, 190

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
IEEE, DIALOG, INSPEC

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	A. Monden, H. Iida, K. Matsumoto, K. Inoue, and K. Torii. A Practical Method for Watermarking Java Programs. In compsoc2000, pages 194-195.	1,2,3,6,9,10,14,16,17,18,22,23,26
X	A. Monden, H. Iida, K. Matsumoto, K. Inoue, and K. Torii. "Watermarking Java Programs," in Proc. 4th International Symposium on Future Software Technology (ISFST'99), pp. 119-124.	1,2,3,6,9,10,14,16,17,18,22,23,26
A	US 4,764,959 A (Watanabe et al.) 16 August 1988 (16.08.1998), column 1, line 66--column 2, line 12).	1-29
A	US 5,559,884 A (Davidson et al.) 24 September 1996 (24.9.1996), column 1, line 66--column 2, line 25.	1-29
A	US 5,692,047 A (McManis) 25 November 1997 (25.11.1997), column 2, line 50--column 3, line 30.	1-29
A, P	6,591,415 B1 (Torrubia-Saez) 8 July 2003, (08.07.2003), column 2, line 51--column 3, line 19.	1-29
A, E	US 6,668,325 B1 (Collberg et al.) 23 December 2003 (23.12.2003), column 2, line 1--column 3, line 20.	1-29

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T"

later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X"

document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y"

document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&"

document member of the same patent family

Date of the actual completion of the international search

09 February 2004 (09.02.2004)

Date of mailing of the international search report

26 FEB 2004

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